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JUNE 10, 1950

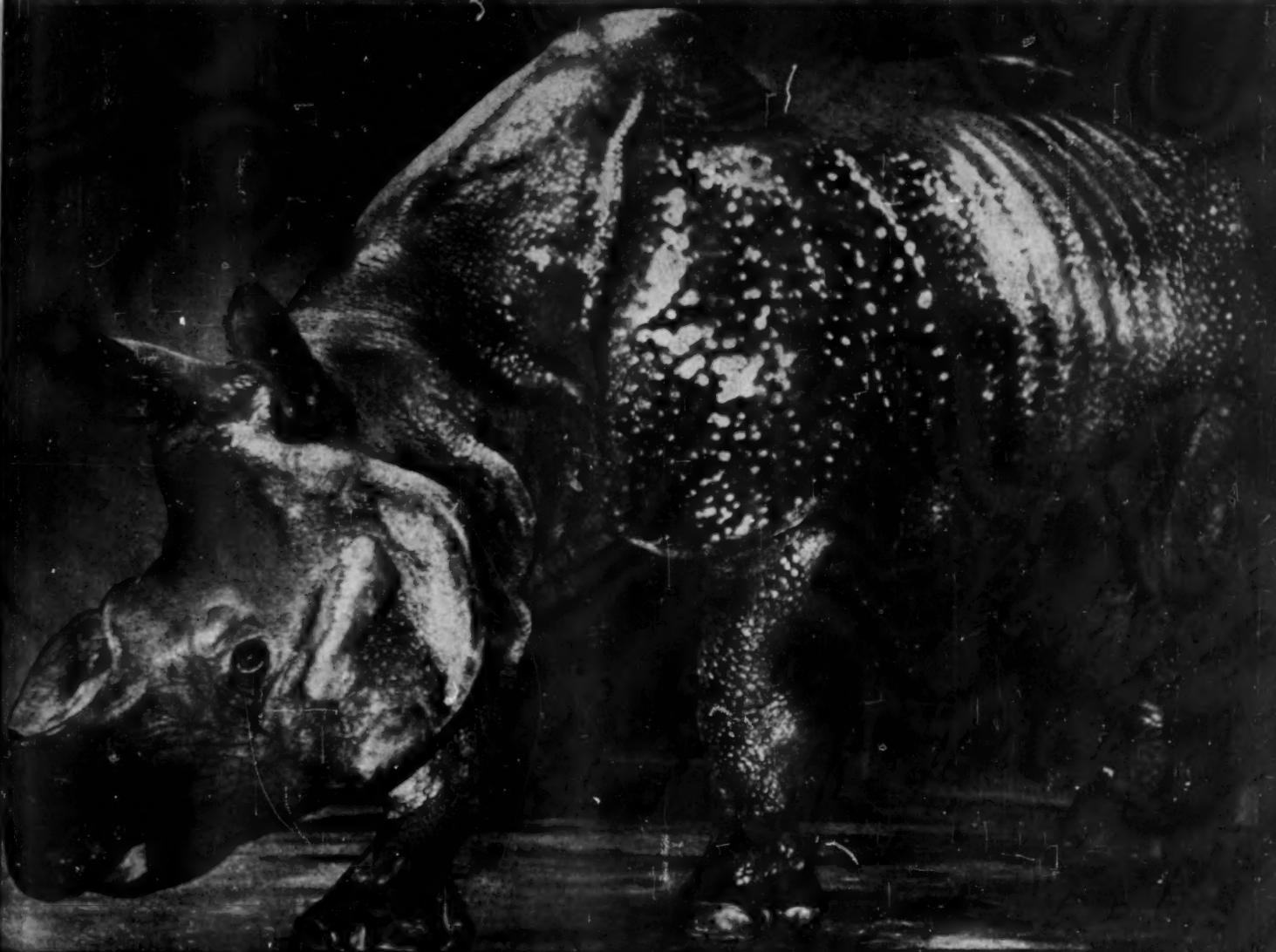
# SCIENCE NEWS LETTER

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DETROIT

THE WEEKLY SUMMARY OF CURRENT SCIENCE



One of the Rarest

See Page 362

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## GERIATRICS

# From Now On: Oldsters

**Older people have important contributions to make to society although their pace may be necessarily slower. Their potentialities should be utilized to the fullest.**

By WATSON DAVIS

*Eleventh in a series of glances forward in science.*

► SO far this has been the child's century. Most babies are born not merely to die. The family, school and community have joined to make childhood a more satisfactory experience, leading to more adequate adults than ever before.

One result of this emphasis upon the child, coupled with the progress of medicine and public health, is that our population is older if not wiser. There are more oldsters, proportionately. Most of us live longer. So our public health people are looking now in midcentury to old people, much as they did years ago to the children.

There is not the emotional appeal in gray hair and stiff joints that there is in blonde curls and toddling. Nurseries will out-draw old folks' homes in a popularity contest. But the world has the older people in it, more than ever, and it is going to make the best of it—for them.

Recognizing that age is not merely a matter of years is a first step. Some people are older and some younger than their years. As the health experts put it, physiological age may be different from chronological age.

No one who avoids the hazards of accident and disease to live to an old age needs to expect to avoid the physiological breakdown that ends in inevitable death. The coming era of the oldsters is not aimed at that. It should be possible to keep people physically vigorous and effectively at work beyond the conventional retirement ages.

Doctors, drugs and right living cannot do it all, but attitudes and prejudices have to be changed. Employers need to know what and how the older people can continue to do jobs. The oldsters must feel capable and adequate. They mirror the prejudices and feelings of the younger people about them. Simultaneously, they create their own lessened usefulness by lack of confidence and willingness to let down because of age.

No school child or job applicant gets away from the aptitude tests and diagnosis procedure that tell with extraordinary success what a youngster should try to do, what he needs to learn and what job is best fitted to him. There should be aptitude tests for those beyond the first six decades of life. Ways that the older men and women can find out what they will do most successfully as the years change them.

The marvelous accomplishments of the handicapped of younger years will inspire

and reconcile those who find that aging involves changing abilities and changing pace. Physiological reserves of all of us change with the years and our resources will last longer if we know how to enhance them and when and how to husband them.

Factories are normally built for those in the prime of life, yet it would be good business for machinery to be made so that it is fitted to older workers who may have a slower reaction time, less stamina and perhaps more patience.

## CHEMISTRY

## Blossoms without Fruit

► HORSE-CHESTNUT trees without their familiar burrs, or honey locusts which will not drop large, purplish-black fruit pods all over your front lawn, may be the next job of new chemical "growth regulators" being tested in Wenatchee, Wash., by U. S. Department of Agriculture scientists.

Such sprays are now being used in Washington apple orchards as a new way of thinning the fruit load on a tree. They can partially "defruit" over-enthusiastic trees which begin to grow more apples than the trees can nourish to proper market size.

This thinning power of the "growth regulators", when used in the spring blossoming season, is all the more remarkable because the same sort of compounds when used in the fall will hold full-grown apples to the trees and prevent dropping.

Dr. L. P. Batjer, horticulturist at the U. S. D. A. Field Laboratory in Wenatchee, was one of the researchers who developed so-called "stick-tight" pre-harvest apple spraying. Now working on the defruiting powers of growth regulators, he points out that such compounds may be extremely valuable in controlling the nuisance fruit grown by many U. S. ornamental and shade trees.

It may be possible to develop a spray which would eliminate the unsightly useless fruit of such trees as the horse-chestnut, honey locust, catalpa, European ash, and eastern poplar, yet retain the beautiful blossoming powers of the trees, Dr. Batjer believes.

A similar prediction comes from the University of North Carolina. Preliminary work by research botanists with the chemical maleic hydrazide has already prevented the ginkgo tree from developing its malodorous, disagreeable fruit.

Many homes have nurseries and play rooms that in time are outgrown. More and more homes in our older world should be rearranged to suit the convenience of those no longer young.

In the old folks' world emerging, expect to see:

A. More attention to the causes and treatments of chronic diseases will make it possible to live into the later years of life with more health.

B. When it is found what are the nutritional needs of older people, there will be age-rated diets and special foods available in the stores, much as baby foods are now sold.

C. Communities and states will begin concerted efforts to rehabilitate, reactivate and re-inspire the older people in order to make them more productive to society, less burdensome financially and, above all, happier.

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The growth regulators have sometimes been termed miracle drugs in the world of plant science. Most notable among them is the war-developed chemical 2,4-D. Now widely used as a weed-killer, 2,4-D does its work by over-stimulating plants to death, scientists believe.

Although 2,4-D has been used experimentally as a thinning spray for fruit trees, agriculture scientists say it is dangerous. It sometimes damages the foliage of sensitive trees. In the experiments being carried on at Wenatchee, naphthalene acetic acid and its sodium salt are among those found most successful.

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## AGRICULTURE

## Buy Frozen Apple Juice After Apple Season

► WHEN apple-picking season rolls around this year, frozen concentrated apple juice will not be far behind.

Scientists at the Department of Agriculture's Western Regional Research Laboratory in Albany, Calif., say that they are not the only researchers working on frozen apple juice. Commercial packers are nearly ready to put the new product on the market.

Two methods of concentrating the essence of the apple—and having it still in the can for addition of water later—are being worked on. One is to separate the volatile essence and the juice, concentrate each separately, and mix them together again before freezing. The other is to make a much more concentrated mash, then add fresh, unconcentrated apple juice just before freezing. The latter method is used in the manufacture of frozen orange juice.

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## ASTRONOMY

# Pluto Less than Earth

**Pluto's diameter has been found to be 3,600 miles, much less than previously anticipated. The observation was made with the Hale telescope by Dr. Gerard P. Kuiper.**

► DISCOVERY that the diameter of the farthest planet of the solar system, Pluto, is 3,600 miles, much less than previously estimated, has been made by Dr. Gerard P. Kuiper, of the University of Chicago's Yerkes Observatory in Williams Bay, Wisc., while a guest using the world's largest, 200-inch Hale telescope of Palomar Observatory in California.

In an extraordinary use of this great telescope, Dr. Kuiper made his observation visually, seeing for the first time the disk of the far-distant planet that was discovered only 20 years ago.

"None but the Hale telescope is sufficiently powerful to show a measurable disk on Pluto," Dr. Kuiper told Science Service. "The result obtained was successful because of the very fine optical qualities of the 200-inch, which is not just another instrument, but occupies a special position in astronomy. My use of this great instrument was through the courtesy of Dr. I. S. Bowen and Milton A. Humason of Palomar Observatory."

Pluto's newly determined diameter is 46% of that of the earth. This is twenty-three hundredths second of arc. The uncertainty in the measurement is one-twentieth of the 3,600 mile diameter.

Dr. Kuiper concluded that Pluto's mass must be about one-tenth of the earth's mass, or ten times smaller than hitherto supposed on the basis of the motion of the planet Neptune. Dr. Kuiper assumes a normal density for Pluto. A body with a mass less than that of the earth would not be expected to be composed of degenerate matter, that is, crushed atoms that would result in the planet being abnormally heavy.

The new measure makes Pluto's size intermediate between that of Mars and Mercury. The reflectivity or albedo of Pluto was found to be 17% compared with 15% for Mars.

The observation by Dr. Kuiper was made on March 21 with a disk meter mounted on the prime focus of the Hale telescope. The seeing that night was extraordinarily good.

Previous estimates of Pluto's size were based on changes in the motion of the neighboring planet Neptune thought to be due to the gravitational attraction of Pluto. Dr. Kuiper explained that the true nature of Neptune's deviations are now not clear but may be partly due to small errors in stellar positions.

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venereal disease.

These PPLO germs, the Pennsylvania group believes, are often the cause of infections involving the eyes, the lower urogenital tract, the joints and any combination of these. Such infections in the past have been called "nonspecific" because doctors could not find any particular germs in the cases.

During his service with armed forces during the war, Dr. Leberman said, he and other military medical men saw many cases of what seemed to be gonorrhea, but in which the gonococcus, cause of gonorrhea, could not be found. These cases, he now thinks, may have been due to PPLO.

PPLO, only discovered in 1937, has been found in women more often than in men and most reports, Mr. Smith said, indicate that they are passed from women to men.

But he thinks they may be transmitted the other way too and that the difficulty in isolating the germs from males is what has kept scientists from recognizing that men can give the germs to women.

The new venereal disease, if it proves to be one, can be cured by streptomycin. No other antibiotic drug, including penicillin and more recent ones, is effective against PPLO infection, Mr. Smith said.

The infection is not fatal, even without streptomycin.

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## AGRICULTURE

## Meat after Deep Freeze Determined by Wraps

► WHAT happens to hamburger in deep freeze? A lot less can come out than went in, a four-year study has shown.

It all depends upon the paper wrapped around it, reports a Michigan State College scientist, L. J. Bratzler of the Department of Animal Husbandry.

One-pound samples of ground beef covered with ordinary brown wrapping paper shrank nearly 40% during 14 months at zero temperature. The same thing happened to samples kept 23 months in waxed "locker paper."

Yet other wrappings, notably cellophane and aluminum foil, resulted even in a slight increase in the weight of the meat—there was no dehydration at all.

In experiments thus far completed, 21 different wrappings were used. Eight or 10 samples were used with each type of wrapper.

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## MEDICINE

# New Venereal Disease?

**A new venereal disease, PPLO for short, may exist. Mistaken for gonorrhea in the past, it can be cured with streptomycin if it really exists.**

► THE possible existence of a new venereal disease appeared in a report to the American Urological Association meeting in Washington.

The disease so far has no name. It is caused by very small germs, just above the larger viruses. These germs are called pleuropneumonia-like organisms, or PPLO for short. They have nothing to do with pneumonia but for some years have been implicated in some cases of arthritis.

A method of growing these germs on a special culture medium outside the body was reported at the meeting by Dr. Paul R. Leberman, Mr. Paul F. Smith and Dr. Harry E. Morton of the University of Pennsylvania School of Medicine. With this new medium, the scientists hope more can be learned about the germs and their role in causing what is believed to be a new



**HOW BIG?**—The average size squash, from 70 to 125 pounds, was grown in the fertile fields near Santiago, Chile, and it is a family meal for 10 for a week. Eaten either raw or cooked, it is the staple basis for many tasty Chilean dishes.

## GENERAL SCIENCE

# Operations Research

**This new technique is a veritable quiz kid in solving problems ranging from the fastest way to wash mess kits to doubling the number of enemy subs sunk.**

► DOWNTOWN traffic jams may soon be solved by scientists doing research on this problem of modern living.

These were the hopeful words of Dr. Philip M. Morse, professor of physics at the Massachusetts Institute of Technology, a leader in the technique called "operations research." He told how it works on the program Adventures in Science, presented each Saturday by Watson Davis, director of Science Service, over the Columbia Broadcasting System.

Operations research, said Dr. Morse, was used during the war to solve problems ranging from how to increase the speed of a line of soldiers washing their mess kits to how to double the number of enemy submarines sunk.

Now it is being increasingly used in present-day defense problems. Dr. Morse is on loan from M. I. T. to the Department of Defense where he is Director of Research of the Weapons Systems Evaluation Group.

"This very new field of scientific application," said Dr. Morse, "involves using the methods of science to study and improve the operations of men and machines."

To illustrate how it works, Dr. Morse told how a scientist, noticing that enlisted men were standing in line a long time to wash their mess kits, practically eliminated the waiting line. There were two tubs of water for washing and two for rinsing. Since rinsing took much less time than washing, the scientist suggested that three of the tubs contain soapy water and only one be used for rinsing. The line of soldiers disappeared like magic.

However, the problem of keeping lines of automobiles moving is more complicated. Work on this and allied problems is going on right now.

"The effective routing of a city bus system is being tackled and the operation of a library and of a large restaurant is being studied," he said.

During the war, he explained, our effectiveness against enemy submarines was doubled merely by changing the depth at which underwater charges were detonated.

"That," he said, "required a detailed probability study through the application of mathematics as well as knowledge of the way in which fuses operate."

Real use is being made of these new techniques in the nation's defense effort, Dr. Morse said. The big difficulty now is a shortage of trained scientists to practice the techniques.

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## INVENTION

## Railroad Radar, Can Warn Of Collision Danger

► HIGH frequency radio warning equipment patented recently can give the engineer of a speeding train a continuous indication of whether another train is on the track ahead, and how far away it is.

The radar-like installation was awarded U. S. patent 2,509,331. The inventor, Paul M. Brannen of Duquesne, Pa., assigned the new warning idea to the Union Switch and Signal Co. of Pennsylvania.

The equipment is designed to supplement the usual safety system on U. S. railroads, which divides a given length of track into "blocks" and flashes semaphore or light signals to show whether a train is in the block ahead.

By high-frequency radio transmitters and receivers installed in the locomotive and caboose of each train, Mr. Brannen's equipment would provide an automatic radio echo from one train to another. An indicator in the engineer's cab would translate the time the echo takes to return into a distance reading.

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## FOOD TECHNOLOGY

# Synthetic Food for World

**Synthetic foods can help to solve the food-population race when the world really begins to feel the pinch. A cheap low cost food mixture is one method.**

► FOOD for many more millions of world population can be manufactured synthetically when future demands make it necessary, Dr. Karl T. Compton, chairman of the Massachusetts Institute of Technology, declared at the dedication of the National Dairy Research Laboratories in Cambridge.

Referring to synthetic foods as a "food reservoir of incalculable magnitude," Dr. Compton said that artificial food will not become important until the world begins to feel a real pinch, either in quantity or price, in the production of food by ordinary methods.

Synthetic rubber substituting for the sap of a tree, nylon made of coal, air and water replacing silk, and plastics from many natural sources as a rival for wood, caused Dr. Compton to be confident that the chemists would produce in volume, at reasonable cost, food when it is needed.

Synthetic foods may be made palatable by simultaneous development of synthetic flavors, Dr. Compton predicted. A number of these flavors are already successfully on the market. Either chemical or biological processes, or probably a combination of both, will be used in the production of synthetic foods, Dr. Compton said.

Development of synthetic foods may be expected when there is real danger of world hunger through inability to produce, not as at present through inability to distribute, he told his scientific audience.

For the immediate future of food supply, nationally and internationally, he urged greater efficiency of production, improved distribution, elimination of waste and intensive development of food for the underprivileged.

A diet that would maintain health at a cost of between \$15.00 and \$16.00 per year per person was developed at Massachusetts Institute of Technology before the war. This low-cost food consisted of corn, wheat, soya and peanuts, with milk powder and added vitamins. Part of the problem of feeding people at low cost could be solved by the use of such food mixture, Dr. Compton said. Suitable flavors and modification of textures would be needed to make a diet of this sort as attractive as it is cheap.

X-rays or high powered electron streams from atom smashing electrical generators will sterilize food without heat in the future, Dr. Compton predicted. This is the newest method of food preservation that promises to be economically feasible. The fresh taste of food preserved with such cathode rays is retained.

High speed vacuum pumps, originally

designed for research in physics, also promise to bring a new kind of food preservation through a process of high vacuum, low temperature, dehydration or distillation.

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## ENGINEERING

## Piston-Turbine Engine Utilizes Exhaust Gases

► A NEW type aircraft engine, a combination of the conventional piston power plant and a gas turbine, utilizes former waste exhaust gases from the cylinders to operate the turbine. It is a fuel-saver.

By recovering and using the energy in the exhaust gas, which is usually discharged as a waste into the air, the turbines produce a large amount of power without any additional fuel. The same power produced by

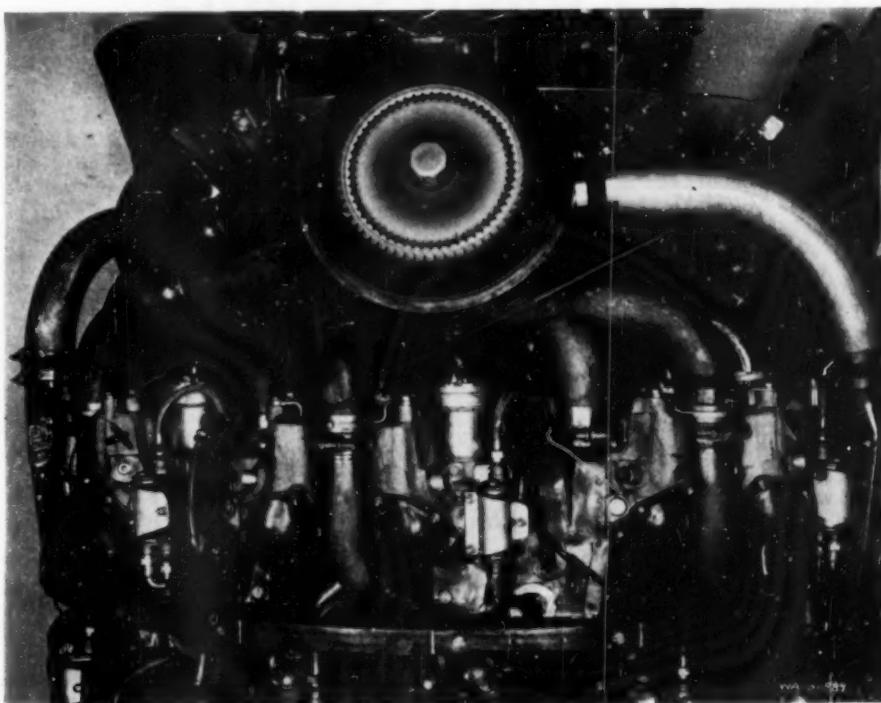
the basic engine is produced in the compound engine with 20% less fuel.

This new engine was developed in Wood Ridge, N. J., by the Wright Aeronautical Corporation under the sponsorship of the U. S. Navy. Experts agree that the turbine engine has many advantages in high-speed aircraft but also appreciate that the conventional reciprocating engine can not be matched as far as reliability and economy in operation and maintenance are concerned. This compound engine is claimed to combine the advantages of both.

The three power-recovery turbines used in this combination are an integral part of the engine. They feed their recovered power directly back into the engine crank-shaft system without impairing basic engine efficiency or adding stresses on reciprocating parts. No operating controls are required aside from those already used to operate the basic engine.

Take-off power rating of this compound engine is 3,250 horsepower, a 20% increase over that of the basic engine. Normal rated power is increased 14% for low blower operation and 28% for high blower. Fuel consumption is reduced 20% for high cruise powers, and 15% for low cruise powers. The new type engine is designed for use in any aircraft where range is a primary operating requirement.

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**ECONOMICAL ENGINE**—This close-up of one of the three turbines of a Wright Turbo-Cyclone 18 compound engine shows how the exhaust from six cylinders is piped to the turbine on the right side of the engine. The single pipe entering the turbine from the top is a cooling air duct for the turbine assembly. The other pipes are siamesed together in pairs to form three gas inlets to the turbine wheel.

## BOTANY

# Tree Gets Water from Air

► A NEW plant secret may have been uncovered in Berkeley, Calif., with the discovery that a mountain tree, the Coulter pine, can drink water out of the air.

The phenomenon may explain how this tree and various types of brush can survive drought on southern California mountain slopes, where in midsummer the soil becomes so dry that other plants wither and die.

Experiments proving that Coulter pine seedlings can suck water from atmosphere of high moisture content are reported in the journal, SCIENCE (May 19), by Dr. Edward C. Stone, plant physiologist at the California Forest and Range Experiment Station of the U. S. Forest Service, Dr. F. W. Went of the California Institute of Technology at Pasadena, and C. L. Young, Forest Service engineer of Arcadia, Calif.

The experimenters call what happens "negative transpiration." Ordinary transpiration is the loss of water from plants into the air. To test whether this process could be reversed, they put the tops of

Coulter pine seedlings into a sealed plexiglas container and raised the relative humidity of the air inside the tube close to 100%. The roots of the seedlings were in soil which had been dried beyond the so-called wilting point.

Within a matter of hours, the plants had drawn enough moisture out of the air in the tube to lower the humidity appreciably.

The scientists think this process may occur during hot summer months when the humidity in the California mountains is sometimes 90%, yet there is so little rain the soil is below the wilting point for most plants.

They are not sure whether negative transpiration is the complete explanation in drought survival by certain plants, but they feel it may be an important factor.

One requirement given is that the plant must have strong leaves or needles. For negative transpiration to operate, the scientists believe, a plant must be rigid enough not to collapse when it becomes very dry.

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## MEDICINE-AERONAUTICS

# Predict Pollen Counts

► IT is now possible to prophesy pollen counts instead of waiting for the count of the previous 24 hours."

This statement, welcome to hayfever sufferers and their doctors, was made by Dr. Herman A. Heise and his wife, Eugenia R. Heise, of Milwaukee, in a report to the Aero Medical Association meeting in Chicago.

For the past four years Dr. and Mrs. Heise, both pilots, have been taking light airplanes into the upper atmosphere for the purpose of discovering the migratory habits of the pollens and molds. Day and all night flights were made.

As many particles could be collected in the airplane in 30 seconds, they found, as could be collected by the ordinary method in 24 hours.

Some of the "important findings" given by Dr. Heise:

Most of the particles rise in the atmosphere to a height of over a mile during the daytime hours.

These particles are usually close to the earth in the early morning hours.

Fair weather cumulus clouds were found loaded with pollens and molds whereas the air between the clouds and above the clouds was practically free from particles.

The factor responsible for the upward distribution of particles is the "temperature lapse rate."

"Ordinarily," Dr. Heise explained, "the air becomes colder with increasing altitude and this condition allows particles to travel

to heights over 6,000 feet since the warm air has a tendency to spiral upward.

The cumulus cloud usually marks the top of an upward spiral and is therefore loaded with particles. On the other hand if the air is warm above and cold below, upward currents cease and the particles lie close to the earth. This condition is particularly marked in the early morning hours, especially when there is a ground fog.

The findings, Dr. Heise says, suggest an explanation for the "almost universal complaint" of feeling worse during damp weather and also make obvious why hayfever sufferers should keep their windows closed at night.

"The study furthermore," Dr. Heise stated, "throws much light upon epidemics resembling the October, 1948, Donora disaster."

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## CHEMISTRY-PHYSICS

# Germanium for Infrared Lenses Made in Purer Form

► A TECHNIQUE of purifying germanium, the chemical from which lenses for spectacularly improved infrared equipment can be made, was announced in Oak Ridge, Tenn.

Lenses made from germanium transmit invisible heat radiation. The germanium

lenses will do this even though they are an inch thick and do not allow ordinary light to pass.

Prior to the discovery of the infrared transmitting qualities of germanium, materials that are attacked by moisture were used for optical work in the infrared region. During the last war important military applications were found for instruments using infrared radiation.

Dr. R. N. Hall of General Electric Research Laboratory found that germanium could be cooled with the direction of cooling controlled so that most of the impurities were concentrated at either end. Successive recrystallizations of the central sections remove impurities to the point where they are almost non-existent.

The extent of their removal is measured by the electrical conductivity, Dr. Hall told the American Physical Society meeting in Oak Ridge.

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## AERONAUTICS

# Jet Pilots Trained in Dark for Night Spotting

► JET planes streaking head-on toward each other at night close the distance between them at more than 1,200 miles an hour—20 miles a minute, a mile every three seconds. Against a backdrop of stars, brilliant at high altitudes, picking out the other's winking wing-tip lights is a split second, life-or-death decision for the pilots.

The U. S. Navy has begun using an astronomer's device, a specially-built star dome, to teach jet pilots quick night recognition. Radar can show another plane is approaching. But night-adapted eyes are still the best insurance in the last few seconds before a possible collision.

At the Naval Aeronautical Medical Laboratory in the Philadelphia Navy Yard, pilots go into pitch darkness in a domed canvas tent. Seated in an actual cutaway cockpit of a jet, they are suddenly surrounded with twinkling stars of the night sky. The pinpoints of light come from a special projector.

In front of the cockpit, painted pitch black, is a model of an oncoming plane. Its wing lights come on, very faintly at first, then brighter and brighter as the instructor turns a rheostat.

By the relative position of the lights, the pilot must decide the course of the approaching plane and veer his own plane away.

The Navy hopes also to learn from its new star projector just how a pilot's night vision is affected by the dim red instrument lights in his own cockpit.

A special assignment, the night vision installation was built for the Navy by Spitz Laboratories, headed by Armand Spitz, director of education at Philadelphia's Franklin Institute, and Nigel Wolff, his partner in the firm which builds the famed Spitz planetariums.

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## METEOROLOGY

# West-East Wind Theory

**Dr. Priestley says the momentum near the equator is transferred to the earth in irregular bursts which affect the speed of the westerlies and thus help determine our weather.**

► A NEW explanation for one of the major causes of our weather has been advanced by Dr. C. H. B. Priestley, Australian meteorologist, in the British scientific journal, *NATURE* (May 27). If the theory is generally accepted by weathermen it may well affect changes in methods of forecasting tomorrow's and next month's weather, according to scientists at the U. S. Weather Bureau in Washington.

Weathermen have long known that, in the northern temperate zone, weather moves from west to east along with the prevailing westerly winds. They have reasoned that one of the major reasons the winds keep moving from west to east in the temperate zone is the momentum provided by the great west-to-east speed of the earth near the equator.

How this force gets from the surface of the earth near the equator to a position where it can push our temperate zone winds from the west to east across our country has been one of the great unresolved mysteries of the weathermen. Dr. Priestley thinks he has the answer.

Just north of the equator the prevailing winds travel from east to west. If the great momentum provided by the extremely fast movement of the earth from west to east at the equator acted on these tropical east to west trade winds, they would be either slowed down, or stopped, or would travel in the opposite direction.

Since this does not happen and the momentum must go somewhere, scientists have figured that most of it is transferred through the air northward to our temperate zone, where it is a major factor in pushing our prevailing winds from west to east. Along with our winds, comes our weather.

Dr. Priestley argues that some of the momentum goes southward at low levels, but that more travels northward at great altitudes—in the upper troposphere and the lower stratosphere. He also says that most of this northward-traveling push is transferred in the latitudes in which lie our southern states and northern Mexico.

According to Dr. Priestley, it is transferred by the whirling, highly unstable air caused by the high-altitude "jet streams"—narrow bands of extremely high-speed winds which caused our wartime pilots so much trouble in flying to Japan. Because the air is unstable, he argues, the momentum is transferred to the temperate zone prevailing westerlies in irregular bursts.

These bursts of momentum, he says, provide a "dynamic link" between the jet streams and the prevailing westerlies. They

are a major cause of the fluctuation in speed of our prevailing westerlies and this fluctuation in speed is one of the determining factors in the kind of weather we have.

However, Dr. Priestley does not claim that his theory is proven.

"This is a highly interesting theory," according to Philip F. Clapp of the Weather Bureau in Washington, "but it is only the latest of half a dozen theories on what makes our weather move from west to east."

Mr. Clapp said that proof of any one of these theories would have to wait for the amassing of much more data and many more observations of the flow of the air.

"Weathermen just don't know enough about the circulation of the air yet," he said. "If they did, they would know which one of these half dozen theories is correct."

One of the major theories heretofore advanced, according to Mr. Clapp, is that the momentum is transferred from the tropical regions along the horizontal plane of the major high pressure areas. When the axis of a high pressure area tilts toward the

northeast, the momentum moves toward the temperate zone. The theory is that the axis tilts northeast often enough to siphon off enough momentum to give our winds the needed westerly push.

Science News Letter, June 10, 1950

## CHEMICAL ENGINEERING

## Emergency Gas Supply From Stored Liquid

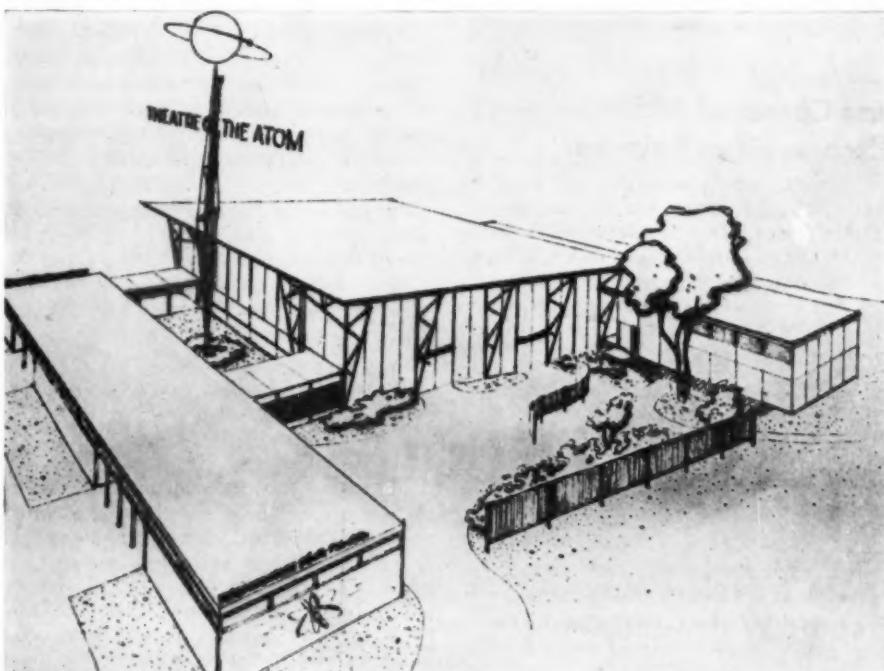
► EMERGENCY gas for heating and domestic fuel can be produced from liquids easily stored ready for instant use.

Designed to meet peak demands upon natural gas systems during the few days of severe winter weather, the emergency gas can be manufactured from air and some volatile petroleum hydrocarbon, as propane. A double overload can thus be met.

Dr. R. M. Deanesly of the Universal Oil Products Co., Chicago, reported to the American Chemical Society meeting in Houston that this autothermic process has been developed on a pilot plant scale and is ready for full scale application.

The air and propane are heated separately to over 1000 degrees Fahrenheit, mixed, and allowed to react for a few hundredths of a second in a brick-lined stove. Some of the propane is burned and the rest is converted into smaller molecules. This gives gas that will mix with natural gas when fed into the system to tide over the emergency.

Science News Letter, June 10, 1950



**THEATER OF THE ATOM**—The theater in above sketch is being constructed on Chicago's lakefront for the Chicago Fair of 1950. Features of the theater's show will be a new three-dimensional atom model, a miniature atom-smasher, an electrostatic "atomic" motor and a "mousetrap" bomb.

## MEDICINE

**Inherited Fat Tendency Linked with Cancer**

► AN INHERITED tendency to fatness and an inherited susceptibility to cancer seem to go hand in hand, research by Dr. Paul F. Fenton at Brown University in Providence, R. I., suggests.

Dr. Fenton's work has been with mice. Those of a strain which develop breast cancer he found, become fat when fed diets to their liking. But mice of a strain that resist cancer usually do not get fat on these same diets.

The findings are considered significant, according to the American Cancer Society, because fat mice and fat people are more susceptible to certain cancers than are skinny ones.

Science News Letter, June 10, 1950

## GENERAL SCIENCE

**Farm Output of Countries Within 5% of Prewar**

► WESTERN Europe's Marshall Plan countries have boosted their agricultural output within five percent of the prewar level, a restricted index published for the first time by the Department of Agriculture reveals.

A great expansion in farm output since the postwar low of 1947-48 is ascribed largely to wider use of fertilizers, greater mechanization and improvements in cultivation and feeding practices.

Science News Letter, June 10, 1950

## ASTRONOMY

**First Comet of 1950 Discovered at Palomar**

► DISCOVERY of the first new comet for 1950 has been made at Mt. Palomar Observatory. Dr. Rudolph Minkowski of Mt. Wilson and Palomar Observatories in California, found this eighth magnitude object with the 48-inch Schmidt telescope. It is too faint to be seen by the naked eye.

At midnight, the comet is high overhead, located between the stars Alpha Herculis in Hercules and Altair in Aquila, the Eagle. It rises a little after midnight and is visible most of the night.

Science News Letter, June 10, 1950

## MEDICINE

**Space Travelers May Breathe Water and Oxygen**

► BREATHING water with oxygen dissolved in it may be the method of the future for preventing fatal convulsions in deep sea divers and during rocket travel in the biosphere and beyond.

Research indicating this and apparatus which can be adapted to attack the problem of water breathing were reported by Drs. S. N. Stein and R. R. Sonnenschein of the University of Illinois College of Medicine at the meeting in Chicago of the Aero Medical Association.

"There is no reason why, with water as a diluent for oxygen, man may not be able to work safely at any depth to which a fish may go, and at any acceleration which his tissues can tolerate physically," the Illinois scientist declared.

Using the pressure chamber they devised, it is possible, they stated, "to investigate the necessary constituents and oxygen pressure required for breathing water."

"Nature has set up the sign post to guide us on this venture—the amniotic fluid in the lung before birth."

"Animals," they stated, "can now be artificially ventilated at any desired rate with any gas in an ambient atmosphere of any other gas at any reasonable pressure."

Brain wave records, electrocardiograms and some indication of oxygen tension can be observed and recorded as guides to the desired constituents and pressures.

Science News Letter, June 10, 1950

## GENERAL SCIENCE

**Summer Students Combine Outings with Study**

► THOUSANDS of students will combine their summer outing with the study of science this summer.

Almost 3,000 are enrolling for summer field courses in geology alone, it is revealed by a survey made by the American Geological Institute in Washington.

Other young men and women will put on blue jeans and arm themselves with geology picks to search for archaeological treasure in university field sessions in anthropology.

The geology students will be mostly men. Although 150 separate courses will be offered this summer by 79 colleges and 30 of them will accept women, only five out of a hundred students enrolled will be girls.

Some of the students will "rough it" in tents and log cabins, but most geology camps occupy modern buildings to which students will return each night from their field studies.

The geology camps offer an opportunity for young men of the east to go west. Most camps will be located west of the Mississippi; 13 institutions will operate camps in Colorado, the most popular state of the 31 offering study of this type. Texas and California are close behind Colorado in number of camps. In eight special survey courses, students will travel from place to place from the Atlantic coast to the Pacific.

The average student will spend six weeks in study and will write a detailed report.

Science News Letter, June 10, 1950

**IN SCIENCE**

## AERONAUTICS

**Aviation Cadet Exchange Promotes Understanding**

► THE exchange of cadets with foreign countries to promote international relations is a definite part of the program of the American Civil Air Patrol.

This was revealed in Washington at a recent meeting of the Wing Commanders of this civilian organization which is sponsored by the U. S. Air Force. At the meeting a 17-year old cadet, Donald E. Chaney, Branson, Mo., made a report of his experiences in England last summer where he spent two weeks as a guest of the Air Training Corps of the United Kingdom.

Each summer the Civil Air Patrol exchanges cadets with similar organizations in other countries. This summer, exchanges will be made with Canada, England, France, Portugal, Switzerland and Italy. The cadets are flown from the country to their destinations in U. S. Air Force craft and returned the same way after visiting youth groups and observing their ways.

At the same time similar young flying enthusiasts from those countries are brought to America and live while here in American homes. The total number of cadets enrolled in the Civil Air Patrol program is approaching 100,000, and this number is expected to be enrolled this year. These young men and women of high school age devote part of their time to studying aviation under instructions provided by the Civil Air Patrol units of the various states. The senior Civil Air Patrol members, in addition to supervising these cadet activities, are an integral part of the Air Force's air rescue services which contributed 65% of last year's search and rescue missions.

Science News Letter, June 10, 1950

## BOTANY-MEDICINE

**Poplar Tree Bark Yields Fungus-Stopping Extract**

► BARK of poplar trees contains unidentified substances that can stop fungus growth, Dr. J. Grosjean, a Dutch scientist working at the Plant Research Institute at Wageningen, Holland, has discovered.

One of the trees whose bark can be used to produce a fungicidal extract is the balsam poplar (*Populus trichocarpa*) which grows in the Pacific Northwest of the United States and is known as the black cottonwood.

While fungus-fighting materials are common in leaves of plants, there is usually less such activity in the bark. According to the British journal, *NATURE* (May 27), the reverse is true for a number of the poplars.

Science News Letter, June 10, 1950

# SCIENCE FIELDS

## MEDICINE

## Organ Transfer Is Newest In Surgery

► A NEW kind of surgery, called organ transfer, promises to make life more livable for many patients now housebound after operations for cancer of the bladder or other bladder diseases.

The operation consists in making a new bladder and bladder outlet out of the patient's own tissues. Part of the large intestine, near the appendix, is cut from the rest of the intestine and made into a pouch which is connected to the kidneys and serves as a bladder.

The operation was reported by Drs. James W. Merricks, R. K. Gilchrist, Howard Hamlin and I. T. Reiger of Chicago at the meeting in Washington, D. C. of the American Urological Association.

Science News Letter, June 10, 1950

## CHEMISTRY

## Plastic Bag in Wine Gives It Better Taste

► BETTER tasting wine through the use of a chemical-containing plastic bag placed in the wine was promised in Chicago.

The chemical gives off a small, constant stream of sulfur dioxide to the wine, although none of the wine can enter the plastic bag, Drs. H. Y. Yang and E. H. Wiegand of Oregon State College, Corvallis, reported to the Institute of Food Technologists. Sulfur dioxide is the only legal preservative for wine, and is effective for this purpose only when in a free state.

Heretofore it has been necessary for the winemaker to add the preservative frequently, which is a nuisance, or to add a large overdose, which results in an undesirable taste and is also unlawful.

Using the polyethylene plastic bag containing potassium metabisulfite, the sulfur dioxide in the wine is maintained at the proper level for preservation. No replenishment is needed, nor is the taste of the wine affected.

Science News Letter, June 10, 1950

## ENTOMOLOGY

## DDT Resistant Housefly Foiled Again by Chemical

► A CHEMICAL that makes DDT effective against houseflies which have grown resistant to DDT's killing action is announced by Drs. A. S. Perry and W. M. Hoskins of the University of California in the journal, SCIENCE (June 2).

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The chemical is piperonyl cyclohexenone, also called piperonyl cyclonene. It is one of several chemicals that act with pyrethrin, an active principle of pyrethrum, to cause a greater insecticidal action than would be obtained by either pyrethrin or the cyclonene chemical alone. Drs. Perry and Hoskins tested a number of these pyrethrin synergists, as they are called, before finding one that would increase DDT's action on DDT-resistant houseflies.

Flies that have grown resistant to DDT, the California scientists find, have developed the ability to convert DDT into another, non-toxic chemical. They think this non-toxic chemical is an ethylene derivative of DDT, called DDE for short.

Piperonyl cyclonene largely prevents the conversion of DDT to DDE.

Science News Letter, June 10, 1950

## MEDICINE

## New Sulfa Drug Good Against Kidney Diseases

► A NEW sulfa drug, known as NU-445, or Gantrisin, is proving good medicine for infectious kidney and bladder diseases such as cystitis and pyelonephritis. Cures in 67 out of 100 cases were reported by Dr. Jerry J. Lash of Los Angeles at the meeting in Washington of the American Urological Association.

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## MEDICINE

## Blood Stockpiling for Disaster and Everyday Use

► A NATIONAL stockpiling of human blood for medical use in time of national disaster as well as meeting everyday needs is the eventual goal of basic changes made in the Red Cross National Blood Program, announced by the Red Cross President, General George C. Marshall.

Building upon the 32 centers for blood collection and distribution organized in the past three years, the augmented plan sets up a new policy committee of five physicians, and enlists the cooperation of medical and professional organizations and government agencies.

The development and appraisal of new methods in the collection, processing and preservation of blood and its components are being stressed in the new blood program as a separate service of the Red Cross.

To serve an emergency need for tremendous quantities of blood in a short time, the Red Cross will work closely with community and hospital blood banks.

Dr. Ross T. McIntire, national director of the blood program, heads the new committee which also includes Dr. Charles A. Janeway of Harvard, Dr. I. S. Ravdin of the University of Pennsylvania, Dr. Charles A. Doan of Ohio State University and Dr. Carl V. Moore of the Washington University School of Medicine.

## SEISMOLOGY

## Torture Chamber Yields Clues to Quakes' Causes

► A SCIENTIFIC "torture chamber" recently completed at the University of California at Los Angeles is being used to learn how mountains and oceans were formed, to understand what causes earthquakes and to determine how to locate precious metal and petroleum deposits.

One of the machines in the laboratory will squeeze rocks with a pressure of 150,000 pounds per square inch. This is equivalent to the pressure that exists 22 miles below the continental crust, seven times deeper than man has penetrated.

After such giant pressures, rocks are examined under the microscope. The "creep" or "flow" of the rocks' structure, it is thought, may be responsible for earthquakes and continent-building. A study of the mechanism of rock fractures is expected to be of help in locating precious metal deposits.

Another device in the laboratory "makes" rocks. Loose sand can be compressed so tightly that it becomes solid quartzite. This study of sand compaction may furnish information about the flow of oil and provide valuable information in the field of petroleum geology.

The laboratory was established partly with a grant by the Office of Naval Research. Prof. David Griggs, Dr. John Handin and Wesley Miller of U. C. L. A.'s Institute of Geophysics are conducting experiments in it.

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## AGRICULTURE

## Weedkiller 2,4-D May Be Time Bomb for Lawn

► THE wonder weedkiller 2,4-D may be a delayed time bomb on your garden or lawn. New evidence is reported in Tucson that the potent chemical can persist in trees over an entire winter and produce injury to foliage the following spring.

Stunted, wilted leaflets appearing on chinaberry trees in the spring budding season last year were traced back to an application of 2,4-D on the surrounding lawn the preceding autumn, Dr. J. G. Brown of the Arizona Agricultural Experiment Station reports.

No immediate injury to the trees was noticed after an application of the weedicide to the lawn. But the symptoms the following spring were unmistakable, Dr. Brown says.

Earlier this year, Dr. Edgar C. Tullis and William C. Davis, researchers at the Department of Agriculture's Rice-Pasture Experiment Station in Beaumont, Texas, reported similar delayed injury to a group of Chinese Tallow trees accidentally sprayed with 2,4-D the previous summer.

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## WILDLIFE

# Birds, Animals Are Vanishing

**Man, the greatest predator, is blamed for the extinction of many species. And the extinction of many more is threatening.**

By SAM MATTHEWS

► HUNDREDS of kinds of animals and birds threaten to become extinct as the dodo in this century. Exactly how many? No one knows.

The International Union for the Protection of Nature, an affiliate of UNESCO, names 13 birds and 15 animals as being on the bitter edge of disappearing forever from the earth.

In North America alone, Dr. Hartley H. T. Jackson of the U. S. Fish and Wildlife Service has estimated, at least 50 wildlife races are seriously threatened.

You may never have heard of the Indian one-horned rhinoceros, the North African bubal, the New Caledonia kagou. Have you seen an Australian hairy-nosed wombat lately?

## 37 Whoopers Left

In Louisiana, a whooping crane nicknamed Mac was kidnapped in March. Two helicopters chased him out of a swamp and whisked him off, not to a zoo, but to a Texas wildlife refuge where Mac could be exposed to the wiles of a female whooping crane.

There are only 37 of the snow-white whoopers left in the world. Yet this tallest of America's waterfowl darkened Midwestern skies migrating north or south a hundred years ago.

Where are the American woodland caribou and the grizzly bears? And what is madame going to wear if the South American chinchilla says to man, as seems likely: "There's not enough room in the world for both of us. Goodbye."

Wherever men have brought "civilization," wildlife which was good to eat, had pretty fur or feathers, or was just fun to shoot at, met the greatest predator on the face of the earth.

"In recent times the human species has been the prime factor in the extermination of other species," says Dr. Jackson.

## Short Life of Dodo Bird

There was the dodo bird. Discovered by Vasco da Gama on the Indian Ocean island of Mauritius in 1497, this swan-sized member of the pigeon family was pot-bellied, ungainly, had wings so short it could not fly, and trusted its new two-legged acquaintance. The Dutch settled the island in 1644. By 1693 the dodo was extinct.

In this country, there was the passenger pigeon. Billions of them, in fact. Then men

cut down forests in its nesting areas. They devised a net that could catch thousands of pigeons at a crack (a million were netted from one flock in Michigan in 1876). Squabs, the young birds, sold in every market. The last passenger pigeon died of old age in the Cincinnati Zoo in September 1914.

Four other American birds are gone: the great auk, the Labrador duck, the heath hen, and the only native U. S. parrot, the Carolina paroquet. Scientists think the Florida hurricane of 1937 ended the Cape Sable sparrow. No one has seen an Eskimo curlew in years, although it is thought to be still in existence.

Among animals, the Maine mink, the eastern puma, 12 types of grizzly bears, Gull Island meadow mouse, Arizona elk, bighorn sheep of the Dakotas, and the big Plains wolf are types counted as extinct.

One armor-plated brute, an Indian one-horned rhinoceros, as shown on this week's cover of SCIENCE NEWS LETTER, is one of the rarest animals living on earth. He gets all the protection he needs at Washington's National Zoological Park, but he has rubbed away his fierce nose tusk trying to get out. Others of his clan are few and far between in India, and becoming scarcer each year.

Within the last century alarmed zoologists, naturalists, and finally hunters themselves, realized what was happening. Now, when a species nears extinction, conserva-

tion is generally brought into play. Simply stated, the procedure is law plus land.

## Laws Protect Species

Laws forbid or limit killing the species. Wildlife sanctuaries are provided for it. Sometimes the formula works, as in the case of the American bison or buffalo. Once down to 1,000 animals, today the buffalo population in parks, refuges and ranches in the U. S. and Canada is above 35,000.

Sometimes it does not. The species, diminished to a point where it cannot withstand natural losses, slips off into oblivion. Neither the most stringent laws nor the most frantic efforts of game wardens can save it.

Dr. Jackson wrote in a 1946 report of the Smithsonian Institution, "Once a type becomes extinct, it never reappears."

(Scientists shy away from saying flatly a particular species is gone, however. Once in a great while an "extinct" creature turns up again.)

## Earth's Rarest Creatures

The International Union names as the earth's rarest creatures today:

Arabian ostrich, Hawaiian goose, kagou, Indian pink-headed duck, Australian ground parakeet, Laysan duck, Marianas mallard, Cuban ivory-billed woodpecker, Bermuda petrel, Marianas megapode, California condor, Eskimo curlew and whooping crane, among birds.

Among animals, Borneo orangoutangs, Javan and Indian rhinoceros, Asiatic lion, Burmese brow-antlered deer, giant sable antelope, North African bubal, Tasmanian



**GOING, GOING!—The tiny costly chinchilla is all but gone from its native South American habitat. Sought after for its fur, it is disappearing rapidly and is even threatened with extinction.**



**GONE!**—Despite frantic efforts by the state of Massachusetts, the last bird of the eastern heath hen species died on Martha's Vineyard in 1931.

wolf, Marsupial banded anteater, wisent, chinchilla, mountain zebra, Caribbean monk seal, Addo bush elephant, and Cuban solenodon.

Researchers such as Dr. Jackson list literally hundreds of other animals and birds becoming dangerously scarce.

A good example is the Florida Keys deer. The Fish and Wildlife Service says only 30 to 40 are still hanging on in mangrove-choked islands between Key West and the mainland.

They swim from key to key in search of fresh water. Far more dangerous than their thirst, however, are illegal hunters. These "sportsmen," some coming from as far as Cuba, set fire to the keys or put dogs ashore. Then they wait in boats for the exhausted deer to try to escape by water.

The fisher, the marten, the wolverine, the unsuspecting kit fox of the western plains, all have been trapped to near-extinction for their fur. The black-footed ferret, several types of seals, the tule elk are in the low hundreds. The Florida manatee and the crocodile are almost relics of the past in this country.

All told, wildlife experts say, more animals and birds will join the dodo in the 20th century than in any other 100-year period in mankind's records.

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Some metals, such as iron, steel and nickel, are called paramagnetic by scientists, meaning they are attracted by magnets; others are diamagnetic, which means having weak magnetic properties.

#### METEOROLOGY

### Warmer than Normal June Over Most of Country

JUNE is going to be warmer than usual over most of the nation—especially warmer in the northeast and southwest. This is the opinion of the Extended Forecast Section of the U. S. Weather Bureau in its 30-day forecast just out.

The northern Rocky Mountain states and the northern plains, however, will experience a cooler than normal June.

The dust bowl area can expect little relief. The Weather Bureau predicts less than normal rainfall in the southwest corner of the country, extending into the western edge of the dust bowl. Over the rest of the area, rains will be normal during June—but normal is not much at this time of the year.

The country's north and central plains and the Great Lakes region, will have generally abundant showery rainfall during June. This means more thunder showers than usual.

Along with its warmer than normal temperatures, the northeastern part of the country will have less rain than usual. The rest of the country can expect about normal amounts of rainfall during June.

Science News Letter, June 10, 1950

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## PHYSICS

# Balance Weighs by Light

► THE most delicate balance yet made by man, one that uses a beam of light to measure weight, has been developed in Charlottesville, Va.

Instead of the conventional scales, this balance suspends the article to be weighed by using magnets. Other balances of this type have been used but have been much less sensitive than this model.

Dr. J. W. Beams of the University of Virginia developed this magnetic suspension balance while working on high speed rotors. The new balance is so sensitive that it is limited only by the motions of air molecules. These motions continue even when the weighing is done in as nearly a complete a vacuum as possible. Even then, although only a relatively few particles are present, they hit the object being weighed in their continual random motion.

This random motion is known as "Brownian motion." The darting, constantly changing directions of the air molecules can be visualized by looking at the sunlight on dust in a recently dusted room.

If this continual motion could be stopped, as it would be at absolute zero, 459.6 degrees below zero Fahrenheit, the accuracy of the balance would be greatly increased. As it is, however, the balance is accurate to one twenty-eighth of a billionth of an ounce.

To operate the balance, the material to be weighed is attached to a cylindrical ferromagnetic body, such as one made of iron, steel or Permalloy. This body is supported freely in the vertical field of a solenoid. It is in such a position that its edge scatters or reflects a light beam into a photo-electron multiplier cell.

This cell governs an electric circuit which in turn regulates the current that goes to the solenoid that suspends the cylinder. When the apparatus is properly adjusted, the suspended body shows no motion. This can be determined by looking at it through a microscope focused on scratches on the cylinder.

In actual practice, however, Dr. Beams weighs by measuring the change in the current in the circuit. This is related to the vertical force exerted on the cylinder.

This magnetic suspension balance is particularly valuable in experiments where the weighing must be done in vacuum, under a transparent liquid or where no mechanical connections to the outside are possible.

Although the apparatus is extremely sensitive, it may be used to weigh over a wide range of masses or forces, Dr. Beams states in the *PHYSICAL REVIEW* (May 15) where his new balance is described.

Science News Letter, June 10, 1950

us too much about functions. We may talk knowingly about cell systems, but we have a very slight idea of what is going on."

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## METEOROLOGY

## Winter of 1949-50 Worked in Reverse

► THE winter of 1949-50 set a record for working in reverse, U. S. Weather Bureau charts show. It was warm where it should have been cold. Then it was cold when it should have been warm. At odd times, it snowed.

It was the warmest January on record in the southeastern portion of the country, the second warmest in Ohio, Delaware and Pennsylvania, the third warmest in Indiana and New Jersey. At Ann Arbor, Mich., on Jan. 25 the thermometer stood at 72 degrees; at Columbus, Ohio, 74 degrees; at Westernport, Md., on the 26th, 83 degrees.

Meanwhile, in the northern border states west of the Great Lakes, record snowfall and low temperatures were the rule rather than the exception. Montana had nine cold waves in a month's time, with a temperature of 57 degrees below zero on Jan. 25 at Chester, Mont. Seattle, Wash., had the coldest and snowiest January on record.

A severe cold wave moved into southern California. While radio comedians shivered audibly from Hollywood, citrus growers fought a losing battle against frost damage as far south as San Diego.

In February, the weather went through a complete switch. It grew warmer in the West and colder in the East. New England got its first heavy snow. Then, in the first week in March, the coldest weather of the winter came to many eastern sections.

Through March and April, temperatures were below normal in all parts of the country except the Southwest. In the last week of April, the northern two-thirds of the nation was still having unusually cold weather. In the first week of May, a cold wave brought rains to the eastern half of the country. Northern New England had a hard freeze. Frosts were felt as far south as western North Carolina.

Science News Letter, June 10, 1950

## GENERAL SCIENCE

## Science Professors Have Chance To Travel, Teach

► SCIENCE professors with a yen for seeing the world can combine their teaching with travel under the Fulbright Act. Professorships in Egypt and Iran in such fields as physics, geology and various types of engineering have just been offered for next academic year.

Deadline for making application for the awards is June 15. Details are handled by the Committee on International Exchange of Persons, located at the National Research Council in Washington.

Science News Letter, June 10, 1950

## MEDICINE

# New Cancer Weapon

► A NEW machine for counting radioactive impulses, combined with little slips of paper, is the latest weapon in the attack on the mysteries of cancer.

Dr. Max Dunn, professor of biochemistry at the University of California at Los Angeles, who has been studying how cells grow for the past 30 years, is using the machine and the slips of paper to find out, quickly and accurately, just what part each of the 19 amino acids plays in the growth of a cell.

Proteins are made up of amino acids. Every cell contains protein. Cancer is the abnormal growth of cells. If Dr. Dunn, with this new tool, can add to the at present scanty knowledge of how a normal cell grows, that addition will contribute to the discovery of the secret of cancer.

Dr. Dunn injects radioactive material into protozoa. After the material has a chance to get into the amino acids and some growth has occurred, the acids are extracted and subjected to paper chromatography.

In paper chromatography, the amino acids are applied to little slips of paper, impregnated with a chemical which absorbs the various amino acids at different

speeds. Dr. Dunn places these slips of paper in his counting machine. The machine records on a continuous tape just where the radioactive material is which he had first injected into the protozoa.

By this method, Dr. Dunn hopes to determine where each amino acid goes when the cells of the protozoa develop, insofar as the occurrence in the proteins of those cells is concerned.

"Once we know what happens," he said, "then we will know the function of each amino acid in cell growth."

However, Dr. Dunn is not looking for quick results.

The function of growth, he pointed out, is a chemical process. In attempting to penetrate the mysteries of that function, he went on, "it is not impossible that what we are trying to do is impossible. Growth may be something too delicate, under the control of forces which we cannot understand too well. We may find out about the forces, we may know the forces, but they may be so delicate that we cannot understand the individual function of each force."

After 30 years of work with cells, Dr. Dunn warned, "Don't look for any discoveries in the near future which will tell

This picture was taken in the Bridgeport office of The Southern New England Telephone Company, one of the 22 operating telephone companies which the Laboratories serve through the Bell System.



### Cutting Board for Telephone Costs

Few of these tools have sharp edges. But they are powerful cost cutters. Whenever a telephone craftsman reaches for one, he finds the right tool ready to his hand. There's no time wasted trying to do a complicated job with make-shift equipment.

Most telephone tools are highly specialized. 90% of dial system tools were de-

signed by Bell Laboratories. Each saves time in maintenance work, installation or construction.

There are tools with lights and mirrors to work deep within relay bays; tools to brush, burnish and polish; tools that vacuum clean—even a tool to weld on new contact points without dismantling a relay. There are gauges to time

dial speeds, others to check spring tension. Some look like a dentist's instruments. Some you have never seen.

Keeping the telephone tool kit abreast of improvements is a continuing job for Bell Telephone Laboratories. It's another example of how the Laboratories help keep the value of your telephone service high, the cost low.

## BELL TELEPHONE LABORATORIES

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## WILDLIFE

**NATURE RAMBLINGS****Walrus**

► JUST about now, enjoying such warmth as the northern sun provides at this season, baby walruses are getting their first baptism in the Arctic Ocean.

Clinging to its mother's neck with its front flippers, the baby walrus gets a free ride while its mother swims and dives in search of the clams, snails, shrimp, and starfish on which it feeds. This burden, weighing perhaps a hundred pounds, bothers the mother not at all, for she herself may weigh up to 2000 pounds. By comparison an Indian squaw with her papoose on her back is hopelessly encumbered.

The baby walrus gets none of the seafood. For many months to come, until its tusks have grown big enough for it to dig for its own clams, the young walrus will subsist on its mother's milk. It won't go off this nursery diet till its tusks are three or four inches long, when it is about two years old.

The tusks of an adult walrus, the distinguishing mark best known to laymen, are formidable-looking weapons. They may grow to more than three feet in length and weigh as much as nine pounds. During the breeding season these tools take on a more belligerent function than digging clams. They become the court of last resort where rival claims are gorily adjudicated. Broken tusks are not uncommon, testament of some embattled courtship.

Walruses are good swimmers, but they are not long-distance champions like their

cousins, the seals. They like to snooze on drifting ice floes, letting the current ferry them to the next destination. If by miscalculation, while clam-digging for example, they let their ice raft drift off so far so that they can not overtake it, they will light out for the nearest land. There are recorded instances of walruses finally beaching themselves in such a state of exhaustion that they lay helpless while the Eskimos slaughtered them.

It is by such ice ferry that the southward spring migration to the Bering Sea is made. Because they are such heavy animals, sometimes too many of them will congregate on one side of an ice floe. Then the whole raft may pitch over, dumping the dozing herd unceremoniously into the drink.

Walrus hide is very thick and tough, and is much prized by the Eskimos for leather. The tusks are made into implements and tools. The animals are valued as a source of food and oil. Originally, walrus-hunting was a hard and hazardous business, requiring the hunters to work up dangerously close to get within lance or harpoon distance. Now, with the white man's rifle, the odds are heavily in favor of the Eskimo, although an animal that is only wounded must be approached with greatest caution.

Science News Letter, June 10, 1950

## RADIO

**Short Wave Broadcasts To Be Heard Soon**

► HOW well short wave radio broadcasts can be heard in this country very soon will be forecast with a regularity and precision near that for weather forecasts.

The National Bureau of Standards announced that, starting June 1, their present service for short wave users would be greatly enlarged. Radio hams, the Defense and State Departments and large communications corporations such as RCA, Bell Telephone and Western Union are regular users of short waves.

The enlarged services include more frequent changing of the warning signals if necessary, daily detailed forecasts for North Atlantic radio transmission and information on long-range conditions for short

wave reception. These services are available from 9:00 a.m. until one-half hour after midnight, the Bureau's Central Radio Propagation Laboratory announced.

Besides sending out this varied information, the division is interested in receiving word about auroras from persons who see displays of Northern Lights. This information helps the laboratory evaluate how bad a radio storm is. It can be reported by telegrams addressed to: CRPL Warning Service, National Bureau of Standards, Washington.

Reports of unusual radio propagation conditions are also very useful and can be sent to the same address, the Bureau announced.

Science News Letter, June 10, 1950

## WILDLIFE

**Cannon-Fired Net Traps Wildfowl for Banding**

► A HUGE net thrown by miniature cannons over a feeding flock is the U.S. Fish and Wildlife Service's newest way to catch wild ducks, geese and other wildfowl.

Purpose of the fast-acting trap is not to put roast fowl on anybody's dinner table. Netting of any type of wildfowl for market or sport is strictly illegal in the United States.

But to study the migratory habits of the millions of birds which fly over the North American continent, wildlife experts must catch a great many in order to band their legs. The new cannon-thrown net, which does not harm its victims, is the most versatile device yet developed for this purpose, according to the Wildlife Service.

Designed and built by Herbert H. Dill and William H. Thornsberry, agents on the Swan Lake National Wildlife Refuge near Sumner, Mo., the net-thrower is described in the JOURNAL OF WILDLIFE MANAGEMENT.

Three steel tubes, two and a half inches in bore, are loaded with a slow-burning, relatively-quiet propelling charge homemade from potassium chlorate and ordinary granulated sugar. Enough force is generated, when this concoction is ignited by an electrical cap, to throw an 80 by 25 foot net 10 feet into the air and 10 to 15 along the ground.

Wildfowl, enticed near the net by bait, barely have time to bat a wing before the net presses them gently back to the ground. Hundreds of birds can sometimes be caught in one throw.

The device is now being used as standard equipment on wildlife refuges in all parts of the United States, in Canada and in Alaska, J. Clark Salyer, chief of refuges in the Wildlife Service, said.

In England, similar nets are being developed using rockets as motive power. Although they have been reported as extremely successful, the Wildlife Service thinks its cannons are as good if not better.

Science News Letter, June 10, 1950

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**BIRDS OF THE WEST**—Ernest Sheldon Booth—*Stanford University Press*, 402 p., illus., \$6.00. A guide book for the beginner.

**THE CRIMINALITY OF WOMEN**—Otto Pollak—*University of Pennsylvania Press*, 180 p., illus., \$3.50. A study of the background, motivation and methods of female offenders.

**FIRE RESISTANCE OF WALLS OF LIGHTWEIGHT AGGREGATE CONCRETE MASONRY UNITS**—Hairy D. Foster, Earl R. Pinkston and S. H. Ingberg—*Gov't. Printing Office*, U. S. Dept. of Commerce Report BMS117, 23 p., illus., paper, 20 cents.

**FLORICULTURE: Fundamentals and Practices**—Alex Laurie and Victor H. Ries—*McGraw-Hill*, 2nd ed., 525 p., illus., \$5.00. Recent advances and new techniques are incorporated in this edition.

**FOR INSURANCE AGAINST DROUGHT—SOIL AND WATER CONSERVATION**—Tom Dale—*Gov't. Printing Office*, U. S. Dept. of Ag. Farmers' Bull. No. 2002, 22 p., illus., paper, 10 cents.

**GRAIN STORAGE IN EAST AND CENTRAL AFRICA: Report of a Survey Oct. 1948 to Jan. 1949**—T. A. Oxley—*His Majesty's Stationery Office*, Colonial Research Publ. No. 5, 42 p., illus., paper, 75 cents.

**HYDROGENATION STUDIES ON MIDLOTHIAN COAL**—Fred W. Bull—*Virginia Polytechnic Institute*, 11 p., paper, 20 cents. A short report on a study done by the author.

**INTRODUCTION TO THE BACTERIA**—C. E. Clifton—*McGraw-Hill*, 528 p., illus., \$5.00. An introductory bacteriology text.

**LARVAE OF THE ELATERID BEETLES OF THE TRIBE LEPTUROIDINI (COLEOPTERA: ELATERIDAE)**—Robert Glen—*Smithsonian Institution*, 246 p., illus., paper, \$1.65. A study of the characters for identification.

**MODERN MEDICINE ANNUAL 1950**—*Modern Medicine*, 828 p., illus., \$5.00. An annual volume containing the articles that appeared in the twenty-four issues of the magazine MODERN MEDICINE during 1949.

**PETROLEUM AND ITS PRODUCTS**—William J. Sweeney—*Phi Lambda Upsilon and Department of Chemistry, Pennsylvania State College*, 145 p., illus., paper, \$2.25. The 24th annual Priestley Lectures discuss the occurrence, production, composition and refining of petroleum.

**RESULTS OF THE CATHERWOOD-CHAPLIN WEST INDIES EXPEDITION, 1948. PART I. PLANTS OF CAYO LARGO (CUBA), SAN ANDRES AND PROVIDENCIA**—George R. Proctor—*Academy of Natural Sciences of Philadelphia*, approx. 25 p., illus., paper, 55 cents.

**RESULTS OF THE CATHERWOOD-CHAPLIN WEST INDIES EXPEDITION, 1948. PART II. BIRDS OF CAYO LARGO (CUBA), SAN ANDRES AND PROVIDENCIA**—James Bond—*Academy of Natural Sciences of Philadelphia*, 25 p., paper, 80 cents.

**SO YOU THINK IT'S LOVE!**—Ralph G. Eckert—*Public Affairs Committee*, 31 p., illus., paper, 20 cents. A pamphlet warning teen-agers

against popular false notions about love and marriage.

**TENSIONS AFFECTING INTERNATIONAL UNDERSTANDING: A Survey of Research**—Otto Klineberg—*Social Science Research Council*, 227 p., paper, \$1.75 (Cloth: \$2.25). A monograph compiling much of the scattered and fragmentary products of research on human behavior.

**VOLCANOLOGICAL OBSERVATIONS**—Frank Alvord Perret—*Carnegie Institution of Washington*, Publ. No. 549, 162 p., illus., paper, \$5.00 (Cloth, \$5.50). A condensed record of the observations made by the author ranging over the past 40 years on the different aspects of volcanoes. Among the volcanoes studied were Huzi (Fujiyama, Japan), Vesuvius, Etna, and Stromboli. Valuable illustrations.

Science News Letter, June 10, 1950

## MEDICINE

### Cures for Skin Diseases From Air-Controlled Rooms

► MANY thousands of people crippled by skin disease could be "cured" or greatly relieved and rehabilitated if skin specialists were given a few completely air controlled rooms for research, Dr. Marion B. Sulzberger of New York University Post Graduate Medical School declared at the U.S. Technical Conference on Air Pollution in Washington.

Object of research in such rooms would be to learn which air conditions would benefit which class of patients. Then there would be hope of treating and curing the patients in their own homes.

"There are many thousands of dermatologic (skin disease) patients who are now useless, disfigured, tortured and despairing and who must continue hopelessly to suffer merely because they cannot 'up stakes' and move to Texas or Arizona or Florida or Egypt," Dr. Sulzberger declared.

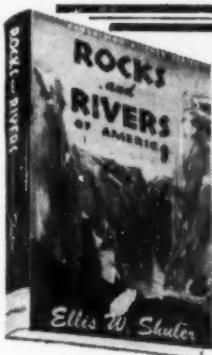
He hopes that the U. S. Public Health Service (one of the government agencies sponsoring the conference) or some philanthropist or foundation or industry such as air conditioning or engineering concerns might sponsor the air controlled rooms needed for research to aid these patients.

High humidities, high temperatures and air stagnation are in a sense air "pollutants," he pointed out.

"It is not just chance," he stated, "that some people 'feel good' only at the seashore, others only in the mountains, still others in the desert, nor that there is often such a mental and bodily 'lift' when the 'air feels good.'

"What are called the effects of climate and environment and season are surely due in a very great measure to the ways in which the air and what it contains affect the lungs and the skin."

Science News Letter, June 10, 1950



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➊ EGG HOLDER and breaker, recently patented, is grasped like pliers and has an enclosure on the other end to hold the egg. A trigger releases a spring-pressed knife blade to split the shell along a definite line so that the contents can be discharged while retaining the shell in the tool.

Science News Letter, June 10, 1950

➋ MUDDINESS METER, technically a "recording turbidimeter," measures the clearness of liquids from household water to muddy rivers. It records the quantity of particles in the water flowing through it by determining how much of a light beam passing through the liquid is scattered by them.

Science News Letter, June 10, 1950

➌ VINYLITE WADERS for fishermen are waist-high like trousers and have seamless feet molded of double-weight plastic for protection against rocks. They are worn over tennis shoes or felt-soled wading shoes, and have only a fraction of the bulk and weight of ordinary wading boots.

Science News Letter, June 10, 1950

➍ TWIST-TUBE CONTAINER, for cosmetics and other creams, is a polyethylene bag within a plastic cylinder which has a metal top and bottom, as shown in the



picture. The bag is fastened to both top and bottom, but the metal bottom can be rotated to twist the bag, forcing the cream out of the top.

Science News Letter, June 10, 1950

➎ TOP-FLOORING, for use in almost any type of building, is applied like plaster with a trowel over rough or smooth bases. It is a new material containing hardwood fibers, chemically treated and bonded with a plastic

material. It hardens by chemical action, not by evaporation.

Science News Letter, June 10, 1950

➏ TELEVISION RECEIVER features an entire chassis organized into eight plug-in units, each performing its separate and distinctive function, yet synchronized in the operation of the whole. For repair or replacement, each unit can be removed without interfering with the rest of the set.

Science News Letter, June 10, 1950

➐ ANTI-SPILL TUMBLER for the youngster is made of near-unbreakable plastic and has a wide, tight-fitting base of the same material into which it fits. If accidentally pushed or bumped, the combination will usually slide along the table instead of tipping over.

Science News Letter, June 10, 1950

➑ PHOTO-ELECTRIC home plate on the baseball diamond registers strikes on a nearby instrument but makes no record of a "ball." It is a metal box with lenses, mirrors and three electric eyes, so placed that only a ball passing over the plate and between shoulder and knee affects the light striking them.

Science News Letter, June 10, 1950

## Do You Know?

*Trichina* in hogs seldom can be detected at the time of slaughter.

France has a new source of iron ore in the recent finding of a rich vein in the region of Salzerais.

The use of "truth" drugs as an aid to psychoanalysis and hypnosis has expanded rapidly in the last decade.

Big-boned, muscular-type persons have a better chance of getting over serious mental disease, if they develop it, than those with low muscular development.

Tuberculosis is today the most important germ-caused disease of the human race; other germ-borne diseases, such as typhoid fever and diphtheria, can be controlled or are controlled.

Farmers and fishermen of northern Norway sleep relatively little during June and July when the sun never sets; they sleep a lot, however, during the winter months of darkness.

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